IEP WQ PWT
May 22, 2001
1:00-4:00 pm, ESO library, Sacramento

Meeting Summary

Present: Zach Hymanson (acting chair), Kitty Triboli, Mike Dempsey, Steve Hayes, Hank Gebhard, Mike Simpson, Scott Waller, Ken Lentz, Anke Mueller-Solger (notes)

Note: During the IEP EMP review period, Jon Burau will not participate in these meetings. Zach will be the acting chair.

Watch for **names in blue**: action items!

Attachments:

- RV Compliance evaluation (Kitty)
- Operations Report (Scott)
- EMP Field Instruments with Calibration Procedures and Frequency (Anke)
- Current Analyses, discrete (boat or van) sampling. (Anke)
- Boat Inventory January 9, 2001 (Kitty)
- Between vessel transfer kit content list (Kitty)
- FIELD CREW PRE and POST OP CHECK LIST for the SAN CARLOS (=Pre- and post float plan) (Kitty)
- Checklist of supplies and equipment necessary to check before the monitoring run by the boat captain. (Scott)
- Agreement on instrument values to be reported (Kitty, Shaun P.)

A. Top of the news

1. San Carlos – how is she? What's in store for her? (Steve, Kitty, Scott)

After emergency outhaul and shaft replacement, she is now back in the water, and running very "smoothly". A summary of work performed during the outhaul can be found in Steve H.'s "one liners" to DWR management. Now all equipment removed for the outhaul has to be put back into place. To gain more time to do this, the compliance will be used for the next benthic and possibly also the water quality monitoring runs. No more outhauls are expected this year.

2. How did the compliance do while the San Carlos was out? (Kitty et al.)

*See also attached evaluation (**Kitty**) and Operations Report (**Scott**)!*

I. Issues raised:

a. There are both pros and cons to using the Compliance for monitoring that are related to her size and shape:
   ii) Pros: The Compliance is faster and able to sample in more confined spaces (e.g. near shore) than the San Carlos.
   iii) Cons: The Compliance is uncomfortably cramped as a working platform and "bounces" at higher speeds or in more tumultuous waters. This makes it hard to work,

especially while under way to the next station. Sometimes it can be outright dangerous/unsafe, especially in San Pablo Bay.

Other identified issues:

b. The Compliance doesn't have adequate head facilities.
c. The current sampling depth (1 ft.) and water intake volumes are inadequate.
d. The Compliance is expensive to maintain when used heavily due to its Volvo outdrives.
e. Compliance computer files are rather messy and need to be cleaned up and better maintained.
f. Currently there is no room for a laptop computer for data entry en route.

II. Discussion results:

a. It's vital to have the Compliance as an emergency back-up in case the San Carlos is out. Overall, the Compliance was a viable substitute for the San Carlos in the past few weeks and thus satisfactorily served its EMP purpose.
b. It's also great to have a second, well-equipped vessel for other studies. The Compliance is used collaboratively by non-EMP projects (e.g. recently for USGS flooded island studies, Lucas et al.). This is considered a "beneficial use" for the Compliance as it fosters productive inter-agency relationships which is in the spirit of IEP.
c. Overall, the equipment and supplies on the San Carlos and the Compliance are now quite similar.
d. If some of the deck instruments are replaced by a YSI 85 (see below), space would become available for a lap top computer.
e. Besides being a back-up vessel, the Compliance could be used more regularly for interior Delta monitoring (*i.e.* in areas with less wind/wave action).
f. The Compliance might be especially useful for benthic monitoring. The davit is better than the San Carlos davit, but the water supply (only two hoses for washing benthos samples) is inadequate. No decisions made at this point.
g. The current sampling depth and water intake volumes need to be increased. However, this requires an outhaul. No action recommended at this time.

III. Action items:

a. Head improvement: **Mike**
b. Computer clean-up: already in progress, **Mikes and Scott**.
c. Computer custodian: **Scott**. In addition: Crew/project chiefs responsible for cleaning up their computer files after each run.

3. Discussion of the goals set for the Compliance as part of the EMP:

s. above and:

Ken Lentz: Primary Purpose for Compliance is monitoring, secondary are IEP special studies.

4. Brief May 8 review meeting recap and overview over next review steps (Zach et al.)

Thanks to EMP staff for their contributions! Overall, meeting was very successful, all major goals were met. Results include a revised review process. Side effects include renewed EMP staff enthusiasm.

5. Web site matters: http://www.iep.water.ca.gov/emp/

Web site will go up very soon. Contains general, WQ PWT, and EMP review info. Comments are welcome. Some pages will be password protected. **(Anke)**

B. Ongoing issues

1. **San Carlos and Compliance equipment storage, inventories and kits**

   - Progress has been made on San Carlos/marina storage. **Scott** will buy another trailer/container for onsite storage (not for personal belongings!)
   - Compliance clean-out and storage: continued progress, almost done.
   - Equipment and supplies lists – done, **s. attached**! And already used for Compliance runs. Needs to eventually be incorporated into Field Manual! (Kit T.)
   - Equipment and supplies kits – not done, although needed items have been identified, **see attached** list. Necessary purchases could be a problem with soon to be defunct Calcards.

   In Addition: Discussion of relocation to Rio Vista, both long-term (5-7 yrs., old naval base) and short term (Rio Vista marina, possibly soon). Rio Vista marina: **Steve** is pursuing this. Scott & Eric visited the marina. Boat berthing might be less of a problem than on-site storage. Anke wondered about the dredging schedule for marina mouth – always deep enough? Saw boat stuck there. If this move doesn't come to pass, it can at least be used as leverage for negotiating the Antioch lease renewal. The DWR director (who has real estate connections in Rio Vista) has been informed and is interested in this issue.

2. **Assembling and testing checklist with tasks for monitoring crews (including boat operator, crew chief, etc.) (Scott, Kitty, et al.)**

   Done for the San Carlos crew, **see attached.**

   In progress: boat operator plans – **see attached draft (Loyd, Eric, Scott)**

   All in progress for the Compliance **(Kitty, Scott)**

3. **New feathers for aging birds: DWR and old Bird upgrade to SB 911+ (Hank/Mike D.)**

   Upgraded deck units have been received by Hank et al.

   DWR Bird upgraded to 911+ specs and equipped with the new SB DO probe (on loan) should arrive here very soon. System will then be reinstalled on the San Carlos and tested asap or while the Compliance is used for monitoring runs (s. also agenda items A 1 and B 4!) (**Hank, Mikes**)

   Old Bird is still here, not upgraded yet. Needs the box currently used by DWR bird for shipping to SB plant.

4. **New dissolved oxygen probe developed by Seabird, "SBE 43" (Hank/Mike D.)**

   DWR Bird equipped with the new SB DO probe should arrive here very soon. The probe is on loan to us for 2 weeks. **Hank** will ask for loan extension. The DO probe will be tested asap on the San Carlos, possibly while the Compliance is used for WQ or benthic monitoring (**Hank, Mike**). **Hank** will prepare a written testing plan (using at least some of the elements in the proposal format prepared by **Anke**).

5. **More on SeaBird probes**

   - Horizontal probe maintenance procedures still in progress by **MIKE S**

- Manual for vertical fluorometer calibration still to be found or acquired. **HANK, KEN L.**
- Vertical fluorometer calibration pending manual recovery. **HANK, MIKEs**
- Tests of New Bird OBS – ongoing, see C 5. **HANK, MIKEs**

6. YSI 85 receptacle installation discussed with next agenda item.

7. **Hank** provided a short written justification of why the YSI 85 is necessary and what it is supposed to do.

Tentative decision: YSI 85s should be used on both vessels to replace the EC and Temperature bench instruments. They will be used to generate back-up measurements for Winkler and horizontal SeaBird measurements.

8. Current deck instruments, recorded parameters, and crew concerns:

Kitty and Shaun P. prepared a table with instruments to be primarily used for EC, Temp., Turbidity, Chl.a fluorescence, and DO measurements **(s. attached)**. This document was based on a discussion during a recent section meeting. A table listing ALL instruments currently measuring these parameters is **attached** and should be checked for accuracy. Current procedures for data recording should be described in more detail. Eventually this should go into the field manual **(Shaun P.)**

9. **Duplication of San Carlos horizontal DO measurement overflow tank on Compliance – update on installation (Hank, Mike S., Jon Y.)**

Completed by Mikes. Some suggestions for improvement by crew. Water intake volume is a concern. Flow needs to be measured. Sucking noise needs to be fixed. Unfortunately no space for additional probes. **Mikes** will continue to work on this.

10. **Back-up DO probes/instruments for fall Ship channel DO surveys**

- **HANK**: Prospect staff communications, to be continued.

- **Zach:** Peggy Lehman communications: Peggy was still unclear on what she will need. **Zach** will ask again.

New issue: Concerns by the San Joaquin Technical Advisory Committee about QA/QC and calibration of multi-parameter stn. 20 DO probe. They will send us a written request for documentation. **Mike D.** and **Hank** should start assembling this documentation.

11. **Field manual and phyto album update and water quality metadata (Kitty, Scott, and Anke)**

Not much progress on this, to be continued… (**Kitty, Scott, and Anke**). The phyto photo album has been scanned. Jeff Janik from operations is interested in helping to create a digital phyto library. **Anke** will talk to him.

12. **Data base and data flow status.**

Not satisfactory, lots of glitches. **Kitty** feels like not very well qualified and frustrated programmer trying to fix the data-input program according to Liz Cook's instructions. **Zach** will talk to Karl Jacobs.

C. Tests & studies

1. **Seabird** post-processing **software** performance (**Scott, Mike S., et al.):** Ongoing communication with software company about some problems. **Scott, Hank, Casey, Mike S.** will meet 5/25 to discuss this issue. **Contract ends 6/30!**

2. Good progress **on discrete chlorophyll** cross-calibration study **(Kitty),** pilot runs were very encouraging. Official start of study next month.

3. **Continuous multiparameter Turner Chl. calibrations** – preliminary results (**Anke**): Waiting for more data from Mike D. Analyzed to date: quite a lot of Stockton, very little Rio Vista, and some Yolo Bypass data.

   Expected products: Mathematical fluorescence-Chl. a conc. relationships to convert fluorescence into Chl. concentrations. Recommendations for Calibration Procedures. Evaluation of sampling accuracy and of Bryte lab method.

   Preliminary results: Better correlation when fluorometer readings and samples for extractions where taken simultaneously – should always be done this way. Correlation overall not very good (R generally between 0.6 and 0.8 for Stockton). Yolo Bypass: Better correlation between field fluorometer and UCDavis fluorometric chlorophyll lab anlyses than with Bryte's spectrophotometric analyses.

4. Vertical DO study related issues :

   Davit: To be addressed next time, **STEVE, HANK, JON**

5. **Hank** will write a **proposal** to study/test the New Bird OBS sensor. Proposal should include a comparison with the Turner turbidimeter. Proposal should follow format prepared by Anke and will be discussed by the WQ PWT at the next meeting. (Agenda item moved from B 5)

6. **New Item: Anke** will prepare a "white paper" on IEP EMP special studies and proposals for the same including a **proposal format**.

D. Miscellaneous

1. Meeting with Menlo Park USGS researchers:

   Postponed (fall) because of timing and boat problems

2. Personnel matters – hires & retires:

   USBR position update **by Ken:** Reclamation has come up with $ to fund the new permanent position at USBR in addition to funding the USGS Foundation student to assist Anke. Bottom line is, full speed ahead in the attempt to hire the Foundation student. **Jon** Burau will work on this.

D) Next meeting: June 29, 1-4 pm, ESO library!

An EVALUATION of the COMPLIANCE as a MONITORING VESSEL

By Kitty Triboli, DWR-ESO, May 2001

In my opinion the Compliance is a viable substitute for the San Carlos when the larger vessel is unavailable. Much of the problems seen on our April run were not due solely to the vessel used, though the Compliance is not a comfortable platform to work from, during windy conditions or while under way at speed.

Measures to ease difficulties:

1. Due to the size, draft, and freeboard of the vessel, the Compliance, and the personnel are more prone to the effects of environmental conditions (wind, wakes, swells, etc….) making it more difficult or impossible to conduct lab work while under way.

    a. Pre and post calibrating of instrumentation is best done while in the harbor. This includes the bench instruments.

    b. In situ operation of the computer (especially the mouse) and instrumentation, written documentation and observations are best done with the vessel proceeding slowly. Both Lloyd and Eric are conscientious about this, although it must not always apparent to the captain when the vessel is operated from up top.

2. Although the San Carlos and compliance have similar computer files and programs used for the collection of electronic data, those on the Compliance are not well organized or easy to find. Better organization, with all unnecessary con files stripped from the SeaBird software would alleviate uncertainty in choosing con files and storage of data.

3. Thanks to Control Systems unit, a portable Winkler kit was provided, along with instructions for the difference in procedure for the May run. This cut overtime that was incurred by running the Winkler D.O.s after the run. The portable kit also provided an in situ comparison of the SeaBirds to Winkler.

Most of all of these issues have already been addressed. Some unforeseen difficulties must simply be handled as best possible when they arise.

I see no manner in which the comfort and safety level can be increased, that is, more seating, easier toilet facilities, and more room (the lack of refrigeration requires dry and wet ice containers onboard), less fatigue. With the platform being less stable under wind and wake, the deployment and retrieval of equipment from the davits requires two people to insure safety.

The greatest virtue of the Compliance is its speed. That quality is diminished by the time one must remain in the harbor, or proceed slowly in order to work well. But, it is obvious that a second vessel is necessary, and the Compliance fills the bill, even though it beats me to death.

Operations Report (by Scott Waller, DWR-ESO)

Dates: May 15-18, 2001.

Type of Run: Water Quality

Crewmembers: Brenn, Ralston, Mecum, & Waller on 5/15; Santos, Schmidt, & Waller on 5/16; Brenn, Gehrts, Philippart, Mecum, & Waller on 5/17; Brenn, Philippart, Mecum, & Waller on 5/18

Vessel: Compliance

Water Quality:

Mike Dempsey (Control Systems) meet with me prior to the May Water Quality Compliance Run to resolve instrumentation, computer, and supply concerns described in April's WQ Crew Chief's Report. The following tasks were accomplished:

1. Mike Dempsey properly conducted verification checks and calibrated the seabird instruments.
2. Hach turbidimeter was cleaned and calibrated
3. A new computer keyboard was installed.
4. A common file and configuration path (identical to the San Carlos) were placed on the computer to help eliminate confusion in the automatic equipment setup process. In addition to providing an organized structure, the file also contains easy-to-find *seasave* configuration and display files. Electronic files (*Standard Operating Procedure*, *Trouble Shooting Log*, and *File Naming Convention*) will also be placed on the computer to assist the user. **Note: Time must be planned to organize (clean and backup) multiple orphaned files on the Compliance's computer.
5. A portable Winkler dissolved oxygen titration kit and magnetic stirrer (along with written instructions) were supplied to enable in situ verification checks with the seabird instruments.
6. Followed preoperational checklist to ensure proper operation of equipment and inventory of supplies necessary for a successful Compliance Monitoring run.

Due to the size, draft, and freeboard of the vessel, the Compliance (and the field staff) is more prone to the effects of environmental conditions (wind, wakes, swell etc…) thus making it more difficult (while underway) to conduct:

1. Pre and Post calibration (verification) of instrumentation used in sample collection.
2. Operation of computer (especially the trackball mouse) and instrumentation.

3. Written documentation.
4. Deployment and retrieval of equipment from the davits (often requires two field personnel).
5. Sample Preservation (The Compliance does not have a refrigerator/freezer…. So an ice chest and dry ice container are used for preservation of samples. These items take up valuable deck and lab space).
6. Sample Collection (a. Only one hose is available for discrete water sampling…it would be advantageous to include an additional hose so dissolved oxygen (Winkler method with DO bottle) and water used for samples can be collected simultaneously. b. The Compliance also lacks counter space for all of our bench instruments. Control System staff is working on an improved instrument verification/comparison procedure that uses an YSI 85 meter).

This is not to say that quality field sampling cannot be completed on the Compliance; but to point out that since the Compliance is a smaller vessel some reengineering and/or reorganization may be necessary to make it more conducive for water sampling. Perhaps a meeting can be planned to help discuss ways of improving sampling collection methods and instrumentation on the Compliance.

Instrument Comparison

Dissolved oxygen values varied (as much as 0.5 units) during pre-verification checks on the horizontal and vertical seabird units. In addition, dissolved oxygen values were consistently different (between 0.3- 0.7 units) during comparison checks at set stations. The vertical seabird unit's dissolved oxygen values tracked better with those recorded by the modified winkler method (see attached excel file "Instrument Comparison May 2001") and varied only as much as 0.2 units.

Specific Conductance values on all three instruments tracked fairly well. Water temperatures values tracked well but a noticeable difference was observed between those collected with the vertical seabird (alongside the boat) and those collected with the YSI thermistor and horizontal seabird (from the flow-thru).

The next compliance run is scheduled for June 12-15.

Operator's report: The vertical seabird's surgical tubing that connects the unit to its protective frame is in need of replacement.

Crew Chief Report – Equipment

DWR#_____E. C. Bridge
Operational ✔
Not Operational

DWR#_____ Turbidimeter
Operational ✔
Not Operational
Problem:_____

DWR#_____ Thermistor
Operational ✔
Not Operational ☐
Problem_____

DWR#_____ SeaBird, vertical
Operational ☐✔
Not Operational ☐
Problem__ _____

DWR#_____ SeaBird, Horizontal
Operational ☐✔
Not Operational ☐
Problem__ _____

DWR#_____ Turner, Nephelometer
Operational ☐✔
Not Operational ☐
Problem_____

DWR#_____ Turner, Fluorometer
Operational ☐✔
Not Operational ☐
Problem_____

EMP Field Instruments with Calibration Procedures and Frequency (Anke)

Instrument	Calibration	Calibration Schedule	Service & Maintenance Schedule
YSI telethermometer	ASTM Thermometer	Pre/Post Sampling Run	Every 3 months (As needed)
Beckman Conductivity Bridge	Bryte Lab EC Standards	Pre/Post Sampling Run	Every 3 months (As needed)
Hach 2100A Turbidimeter	VWR Turbidimeter Standards	Pre/Post Sampling Run	Every 3 months (As needed)
Turner Fluorometer	Rhodamine B – Bryte Lab	Once a month (As needed)	Every 3 months (As needed)
Turner Nephelometer	Formazin – Bryte Lab	Once a month (As needed)	Every 3 months (As needed)
Vertical Seabird CTD Unit			
1. Dissolved Oxygen Probe	Manufacturer's Specifications	Verification check at each station (using other instruments)	Every 3 months (As needed)
2. Electrical Conductivity Probe	Manufacturer's Specifications	Verification check at each station (using other instruments)	Every 3 months (As needed)
3. Temperature Probe	Manufacturer's Specifications	Verification check at each station (using other instruments)	Every 3 months (As needed)
4. Optical Back Scatterance	Manufacturer's Specifications		Every 3 months (As needed)
5. Depth	Manufacturer's Specifications		Every 3 months (As needed)
Horizontal Seabird CTD Unit			
1. Dissolved Oxygen Probe	Manufacturer's Specifications	Verification check at each station (using other instruments)	Every 3 months (As needed)
2. Electrical Conductivity Probe	Manufacturer's Specifications	Verification check at each station (using other instruments)	Every 3 months (As needed)
3. Temperature Probe	Manufacturer's Specifications	Verification check at each station (using other instruments)	Every 3 months (As needed)
Schneider RM25C	Wt, EC, pH, DO, air temp, SRI, WS, WD	Once a month (As needed)	Every 3 months (As needed)
Data Logger Ocean Data Equipment (ODE)		Checked Daily	Once a year (As needed)
EM100	EC, ph, do, wt	Once a month (As needed)	Every 3 months (As needed)

Current Analyses, discrete (boat or van) sampling. (Anke)

Variable	Field and Lab Analysis	Units	Analysis by[1]	Method[2]
Chemical	Total Suspended Solids (TSS)	mg/L	Bryte Lab	EPA 160.2
Chemical	Volatile Suspended Solids (VSS)	mg/L	Bryte Lab	EPA 160.4
Chemical	Todal Dissolved Solids (TDS)	mg/L	Bryte Lab	SM 2540-C
Chemical	Total Organic Nitrogen	mg/L	Bryte Lab	EPA 351.2
Chemical	Dissolved Organic Nitrogen	mg/L	Bryte Lab	EPA 351.2
Chemical	Dissolved Ammonia	mg/L as N	Bryte Lab	EPA 350.1
Chemical	Dissolved Nitrite + Nitrate	mg/L as N	Bryte Lab	Mod. SM 4500-NO3-F
Chemical	Total Kjeldahl Nitrogen	mg/L as N	Bryte Lab	EPA 351.2
Chemical	Total Phosphorus	mg/L	Bryte Lab	EPA 365.4
Chemical	Dissolved Ortho-Phosphate	mg/L as P	Bryte Lab	Mod. EPA 365.1
Chemical	Dissolved Chloride	mg/L	Bryte Lab	EPA 325.2
Chemical	Dissolved Silica (SiO2)	mg/L	Bryte Lab	SM 4500-Si-D
Biological	Chlorophyll a, discrete (spectrophotometric)	µg/L	Bryte Lab	SM 10200H
Biological	Pheophytin a, discrete (spectrophotometric)	µg/L	Bryte Lab	SM 10200H
Pedological	Sediment (benthic sites) – organic content	%	Bryte Lab	ASTM D2974-87
Pedological	Sediment (benthic sites) – particle size anal.	%	Bryte Lab	ASTM D422-63
Biological	Chlorophyll a, continuous, on-board, fluorometric	µg/L	RV Crew	
Chemical	Dissolved Oxygen, Winkler	mg/L	RV Crew	
Chemical	Dissolved Oxygen, Sea Bird and YSI Probes	mg/L	RV Crew	
Physical	Water Temperature	oC	RV Crew	
Chemical	Turbidity	NTU	RV Crew	
Physical	Secchi	cm	RV Crew	
Chemical	Specific Conductance	µS/cm	RV Crew	
Physical	Water Depth	Feet	RV Crew	
Physical	Sample Depth	Feet	RV Crew	
Physical	Time	PST	RV Crew	
Biological	Benthos composition and abundances		Hydrozool.	
Biological	Phytoplankton composition and abundances		DWR Staff	
Biological	Zooplankton composition and abundances		DFG Staff	

1 Bryte Lab: DWR Bryte Chemical Laboratory, Bill Nickels, Director.
RV Crew: DWR-ESO, DFG, and USGS staffing San Carlos and Compliance
Hydrozool: Hydrozoology Laboratories, Newcastle, CA (Contract laboratory)

2 EPA, APHA Standard Methods (SM), and American Society for Testing and Materials (ASTM), some with DWR-Bryte Lab modifications (Mod.)

Boat Inventory January 9, 2001, Kitty Triboli

Port Side

Essentials are underlined

Top Drawer nearest the door

1. Hose nozzles X 3
2. Assorted hose connectors X 18
3. ¾ fittings X 2
4. Tape measure
5. Putty knife (scraper)
6. Loctite – tube
7. Cable clamp
8. Seal – raw water Diesel
9. Elmer Stix-all glue
10. Liquid electrical tape
11. Cable cutters
12. Wrench
13. Fan belt
14. Assorted nuts and bolts

2 Drawers from the top

1. Gloves, rubber
2. Sea Bird winch bracket
3. Thimbles, galvanized X 2
4. Hose clamp
5. Tape, masking X 2
6. Assorted screws

Third drawer from top

1. Ball peen hammer
2. Leather gloves
3. Rubber gloves
4. Swivel
5. Locking pins for props
6. Big nut for propeller
7. Fluorometer fitting

Next to Bottom Drawer

Nuts, Bolts, gaskets for large sonar
Assorted nuts and bolts
Shackles X 2
Messenger for Van Dorn
SeaBird winch cable clamp

Bottom Drawer

1. Packing glans for prop shaft
2. Winch block
3. Assorted gloves

Cubby Hole under the computer keyboard

1. Van Dorn
2. A few pieces of rubber hose
3. Instrument panel plate
4. Trash can

Hidie Hole storage

1. Millipore Vacuum Pump
2. Phyto bottles
3. Assorted empty bottles (pH, KIO3)
4. PVC pipe assembly
5. Zoo tow nets

Cubby Hole to the right side of printer

1. Non rolling chair
2. Cover for SeaBird Fish

Top drawer –bench instruments
port Side

1. Powder pillows, red, white and blue
2. Scissors X 2
3. Stir bars (small)
4. Lab marking pens
5. Small wire for cleaning the titration pipette

Top Drawer – bench (right)

1. Latex examining gloves
2. Bulbs for pipetting
3. 10 ml glass pipettes
4. Large watch glass
5. Pipe stem cleaner
6. Pipette pump that doesn't work well

Cabinet beneath the two portside drawers

1. E. C. Standards

Under the Portside Sink

1. Refrigerator basket
2. Brush for cleaning
3. Scotch Bright Cleaning pad
4. Aquarium cleaning equipment
5. Cleaning fluid X 2
6. Rubber hose
7. Squirt bottle
8. Cover to a pH meter
9. Netting for cushion
10. Cushioned transport box for E.C. probe
11. Old sample bottle
12. Computer adapter

Drawers under the D.O. bottles

Top drawer

1. Thermometers X 2
2. Bulbs for titration unit
3. 10 m. Pipettes
4. Stir bars, large
5. Magnatized retriever
6. 10ml nalgene pipetter that doesn't work well
7. Thermometer covers X 2

2nd from Top

1. O rings for filtering units
2. Messenger for Van Dorn X 2
3. Spigots for Van Dorns or water jugs X 4
4. D.O. bottle tops
5. Mini stir bars

3rd Drawer

1. Disposable 10 ml pipettes

4th Drawer

1. Large rubber stopper with hole
2. Large lid for benthic bottle

Bottom Drawer under D.O. bottles

1. Powder pillows
2. Blue millipore stoppers with center holes

Upright Cabinet (a mid ship, portside)
Top shelf

1. Storage bags
2. Coin envelopes for chlorophylls
3. Zip lock bags for benthics
4. Fluorescent bulbs
5. Halogen bulbs X 4
6. Glass fiber filters for chlorophylls
7. Lugols solution
8. Miniature automotive lamp
9. Screen fabric for benthic
10. Turbidimeter cells X 4

2nd Shelf

1. Coin envelopes X 4
2. Protective eye ware (goggles)
3. Hand cleaner
4. Splicing kit
5. Stir plates X 2
6. Cleaner – stainless steel
7. Formalin polymerizer for spills X 2
8. Light bulbs X 2
9. Squeeze bottle

10. 10 ml pipettes

3rd Shelf

1. Small cardboard box of assorted odds and ends – phyto bottle caps, Ts, fittings and hose clamps (nylon)
2. Old orange benthic bucket with pieces of rubber hose and filtering manifold, stopcock, filtering flask (plastic), small note pad, piece of screen used for smoothing broken glass.
3. Gray cardboard box = rubber sleeves and gloves for safety
4. Thermometer probe
5. Goggles
6. Tape writer kit
7. Divided plastic box to hold nylon hose clamps
8. Brown cardboard box =
9. Small zoo tow net + 2 cuffs,
10. Large trash bags,
11. Hex head clamps,
12. 3 large poly hose connectors,
13. 1 deionized water jug

All these items could be stored on the dock

4th Shelf

1. 6 deionized water jugs
2. Zoo Net flow gage

Bottom Shelf

1. Large shackle
2. Large steel plate and shaft assemblage
3. Large sample jug with spigot
4. Drawer guides
5. Door handles X 2
6. 5" Nuts with bolts
7. Electrical outlet box

Starboard Side

Desk Top
Top Shelf

1. binders X 14 + phone book
2. MSDS binder
3. Fish tank supplies

Desk Bottom Shelf
Left

1. Light bulbs
2. Wetting stone
3. Plastic bags – aluminum recycle

Middle

1. Hole punch
2. Pencil sharpener
3. Computer desks
4. Postit notes

Right

1. Clip boards X 2
2. Batteries for pinger
3. Paper for printer

Desk, Left Long Drawer

1. Rubber bands
2. Scalp shade
3. Label holders
4. Stir stick
5. Masking tape

Desk, Right Drawer

1. Pens, pencils
2. Batteries for pinger
3. Paper Clips
4. Scissors

Desk, 2nd drawer down, right hand side

1. Zip Lock bags
2. Large Marking pens

3. Measure Tape
4. Marezine

Desk, 3rd drawer down

1. Masking tape
2. Filament tape
3. Paper clips
4. Amps/volts switch
5. White out

Desk, 4th drawer down (bottom)

1. Celinoid for auto pilot
2. Assorted note books (HydroLab) etc.
3. Filament Tape

Drawer under the fish tank

1. Fish hooks (just the keep the fish in line)
2. 5" knife
3. 5µ and 20µ filters

Starboard Filtering Bench
Middle Drawer

1. faucet fittings and O rings
2. Stop cock grease
3. Glass etcher
4. Wire brush

Cabinet Under Filtering Bench

1. Box ¼ I D rubber tubing
2. Plastic tubing… clear, white, black, clear with Criss cross (many different diameters)
3. Length of garden hose
4. Plastic webbing for padding of cylinders
5. Specimen cups

In the Gray TuffCrate

1. Cubitainer (1 gal)
2. Poly jar (benthic, large)
3. 1 glass jar no lid (odd shape)
4. plastic funnel
5. plastic propellers X 2

Clear Plastic Crate:

1. Super long temperature probe
2. Drawer slides
3. Vacuum closures

Hose Cupboard

1. Length of yellow rope
2. Fire hose
3. SeaGear Cod end for Zoo Tows
4. Sample bottle used in Special Study
5. Metal hose clamps
6. Clipboards

Drawers Under the filtering rack
Top Drawer

1. Filters, glass and plastic
2. Zip ties
3. Large stir stars
4. O rings for filtering apparatus
5. Plastic hose joiners and Ys
6. Forceps
7. Gum rubber stoppers for filtering
8. Round brush for cleaning
9. Small twine

2nd Drawer Down

Filters and filtering apparatus

3rd Drawer Down

1. Netting
2. Water bottles
3. Filtering flasks, beakers and stoppers
4. Graduated cylinder

5. 100 ml flasks
6. Van dorn Clamp
7. Brushes
8. Fish net (small)

Bottom Drawer

1. Chemicals and soap

Under the Starboard Sink

1. Fire extinguisher
2. Benthic sorting box + benthic screen tops
3. PVC elbows (large)
4. 400' Co ax cable X 2
5. Sample bottles X 6
6. Plastic filtering flasks
7. Gloves (rubber)
8. Fishing gear
9. 70% Ethanol
10. Formaldehyde Control agent
11. Wash bottles
12. Ammonium Hydroxide from January '96 (for D.O. calibration)

Starboard Cabinet to the right of the sink

1. Eye wash
2. Radio
3. Brush (deck)
4. Light globes
5. Paneling
6. Impellers X 2
7. Stick: mop handle
8. Spray wand
9. Flash light with out batteries
10. Extension chord
11. Alternator part – distributor cap?
12. Water pump accessory
13. Assorted nuts and bolts
14. Sample bottle
15. Stainless steel polish X 2
16. Zep metal preserver
17. Shackle (small)
18. Winch (BIG)
19. Wire
20. Dive weight
21. Engine hose
22. Bailing wire – roll
23. Bungie chords
24. Fuel filter
25. Orange paint
26. Rust penitrant
27. Safety belt with harness
28. Impeller
29. Hose clamps, both small and large
30. Alternator
31. Monkey wrench
32. Winch (small)
33. Greasy piston
34. Bomb
35. Hose Clamps
36. Level winder for back deck gear
37. Assorted greasy boat parts

BETWEEN VESSEL TRANSFER KIT CONTENT LIST
By Kitty Triboli, DWR-ESO

Filtering Station:

1. Vacuum pump for filtering
2. Filtering manifold X 2, with funnels
3. Filtering flasks for residue
4. Tubing and clamps for jury rigging
5. Milipore filters
6. Glass fiber filters
7. Magnesium Carbonate
8. Volumetric flasks, 500 mls, 200 mls
9. Forceps
10. Deionized water
11. Wash bottles
12. Disposable pipettes for adjusting volume in flasks
13. Kim wipes

Field Measurements:

1. Thermometer
2. Turbidimeter
3. Secchi disk
4. E.C. bridge
5. E.C. standards
6. D.O. bottles and tops – portable kit
7. Powder pillows
8. Scissors

Sampling:

1. Sample jug
2. Stir rod
3. Dry ice
4. Wet ice
5. Sample bottles
6. Chlorophyll envelopes
7. Paper work & pencils

For safety:
1. Telephone
2. PFDs

FIELD CREW PRE and POST OP CHECK LIST for the SAN CARLOS

PRE:

1. Turn on through-hull pump
2. Push the **ON** button on the Turners
3. Turn on computer
4. Remove the cap from the D.O. sensor and tube from the E.C. sensor
5. Check the Turner Times against the computer time
6. Erase all data from Turners, check to see Turners are logging.
7. Take SeaBird fish to the back deck. Connect SeaBird Fish to Co-Ax cable. Hook it up to the through-hull faucet. Let the water run through it. Put pinger in place(with batteries inside)
8. Start the programs, GPS, Horizontal and Vertical
9. SeaBird verification: With the water running through the SeaBird fish, print both vertical and horizontal screens while taking bench instrumentation and Winkler D.O.
10. Through “My computer”, drive C, check that the files are collecting data.
11. Calibrate bench instruments. (find factor for thio)
12. Soak millipore filters, ready the filtering apparatus

POST:

1. Hook SeaBird fish up to through-hull faucet. With water running through, print both vertical and horizontal screens while taking bench readings including D.O.
2. After the programs are shut down, down-load all data to the small disk
3. Shut off both screens
4. Shut off printer
5. On the last day, remove the pinger and remover the batteries from the pinger
6. Run D.I. water through the SeaBird fish, then stopper up the fish with D.I. water in the system
7. Bring SeaBird fish inside the lab
8. Turn davit around, and either prepare for Benthic run, or put the davit to bed
9. Put cap on Horizontal D.O. probe
10. Put D.I. water in E.C. probe via a short rubber tube.
11. Push in the key board
12. Gather all paperwork
13. Don’t forget the phytos

This checklist represents a summary of the supplies and equipment necessary to check before the monitoring run by the **boat captain**. – Scott Waller

Boat	Item
❑	Hydraulic System (Check for proper hydraulic fluid level and proper operation)
❑	Generator (Check coolant level, oil level, and proper operation)
❑	Fuel
❑	Oil
❑	Racors (Check for water in Racor filters)
❑	Drive Belts (Check power steering and alternator belts)
❑	Check Power to Breaker Box (after starting engines)
❑	Check that Shore Power is properly switched to Generator
❑	Bilge Pumps (proper operation)
❑	Fresh Water Tank (check for leaks and proper operation)
❑	Flow Through Pump (Check for proper operation)
❑	General Plumbing (Check for leaks)
❑	GPS (Check for proper operation)
❑	Electrical (Check proper operation and check the main breaker box)

AGREEMENT ON INSTRUMENT VALUES TO BE REPORTED

During our last unit meeting Mr. Philippart brought up and recorded the results from a joint discussion on which instrument values are to be recorded for the database. Preliminary write-up follows:

Current Instrumentation Employed for Field Measurements

Constituent	San Carlos/Compliance	Bio Van
Conductance (EC)	Beckman RC-20 EC Bridge, Horizontal Seabird (SBE 31), Vertical Seabird (SBE 911plus)	Beckman RC-20 EC Bridge
Water Depth	Depth Meter	Weighted Tape Measure
Dissolved Oxygen	Modified Winkler Method, Horizontal Seabird (SBE 31), Vertical Seabird (SBE 911plus)	Modified Winkler Method
Chlorophyll/ Fluroescence	Turner 10 AU (Fluorometer)	none
Secchi Depth	Secchi Disk	Secchi Disk
Turbidity	Hach 2100A Turbidimeter, Turner 10 AU (Nephelometer)	Hach 2100A Turbidimeter
Water Temperature	YSI thermistor, Horizontal Seabird (SBE 31), Vertical Seabird (SBE 911plus)	YSI thermistor

Data base values to be recorded from the following instruments and locations:

Constituent	San Carlos/Compliance	Bio Van	Location Recorded
Conductance (EC)	Horizontal Seabird (SBE 31)	Beckman RC-20 EC Bridge	On-site
Water Depth	Depth Meter	Weighted Tape Measure	On-site
Dissolved Oxygen	Modified Winkler Method	Modified Winkler Method	On-site
Fluroescence	Turner 10 AU (Fluorometer)	none	On-site
Secchi Depth	Secchi Disk	Secchi Disk	During pre-tow vertical seabird drop
Turbidity	Turner 10 AU (Nephelometer)	Hach 2100A Turbidimeter	On-site
Water Temperature	Horizontal Seabird (SBE 31)	YSI thermistor	On-site

Verification of instrumentation values will be conducted for conductance (EC), dissolved oxygen, turbidity, and water temperature.
If confidence in instrument readings is in doubt, data from the bench instruments will be reported.

Also Discussed: Where to sample stations:

- During pre-tow vertical seabird drop, secchi disk depth will be recorded

- On site – modified winkler method, vertical seabird, discrete water collection

- Instrument comparisons will be done only where water quality and zooplankton tow sites coincide.